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Optimism and health-related behaviour in Czech university students and adults

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Abstract

The exploratory study, conducted as a part of a research project supported by the Czech Science Foundation (No. 13-19808S), attempted to shed more light on the interrelations between dispositional optimism/pessimism, explanatory style optimism/pessimism, defensive pessimism/strategic optimism, and health-related behaviour. The main objective was to test whether findings obtained on American population and several European samples concerning positive relationships between optimism and health-related activity, and between pessimism and passivity, can be replicated on a Czech sample. The analysis of data from 268 respondents aged between 16 and 96 did not confirm any significant associations between different types of optimism/pessimism and health behaviours except for one: Promotion of mental well-being was predicted by defensive pessimism and by optimistic explanatory style, especially the stability dimension. The study also addresses the complex interrelations between different optimism/pessimism constructs, health-related behaviour, and subjective health problems.

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Keywords: optimism; pessimism; health; health behaviour

1. Background

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The past one hundred years saw radical changes regarding the main causes of disease and death, as well as an increase in overall awareness of these causes. Considering the well-founded fear of infectious diseases at the beginning of the 20th century, it is understandable that epidemiologic research and biomedical approach to health pervaded the health sciences at that time. Today, however, such focus has largely lost its purpose. The most widespread clinical conditions of the 21st century (cardiovascular problems and cancer) are co-determined by physiological and psychological factors. Health has become an important value (part of our implicit conceptins of normality, as Havigerová, 2012, added) and is no longer approached from a biomedical, but from a complex bio-eco-psycho-social perspective, which incorporates a whole range of both internal and external determinants. Health is affected by genetic predispositions, living and working environments, people's lifestyles, and accessible health services. Machová (2009) rated each of these four factors according to the relative degree of influence (Fig. 1).

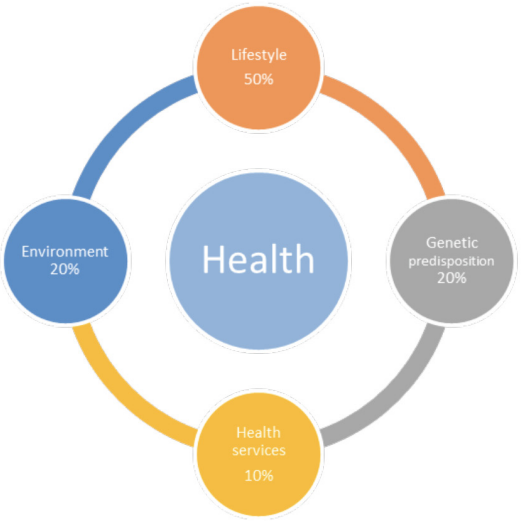

Figure 1Associations between health and determinants of health (Machová, 2009)

The diagram indicates that our health is principally affected by our lifestyles (50%). In other words, it is our own behaviour which is most closely linked to our overall health condition.

Naturally, people vary widely in how much they effort in maintaining their own health, as well as in the type and amount of health behaviours they engage in. Health-related behaviour is strongly influenced by people's personality and other cognitive and emotional factors (health beliefs and illness beliefs, perceived risk and threat, health locus of control, self-esteem, well-being, dominant coping style, expectations for the future, attributions, etc.). The present study focuses especially on the relationship between health behaviour and optimism/pessimism.

Currently, optimism is approached from several largely heterogeneous perspectives differing in the aspects they emphasize. Carver & Scheier (2002) in their theory of dispositional optimism define optimism as generalized expectation of positive course and results of various events or actions. In their view, it is a relatively stable and consistent, genetically determined trait.

The theory of optimism as an explanatory style is based on the concepts of attributions and learned helplessness (Seligman, 1990). Optimistic explanatory style is characterized by attributing external, unstable and specific causes to failures and negative experiences. Conversely, pessimistic explanatory style involves attributing internal, stable and global causes to such negative events. Seligman and his colleagues assume that explanatory style is changeable and argue that pessimistic explanatory style can be shaped into optimistic explanatory style (Seligman et al., 1988).

Unrealistic optimism is a construct introduced by Weinstein (1980), defined as a general tendency to expect that negative events will more likely happen to others while positive events will more likely happen to us. Unrealistic optimism is closely linked to the concept of 'positive illusions' (Taylor & Brown, 1988; 1994), which are commonly

found in happy, mentally healthy and well-functioning individuals (moderately inflated assessment of one's abilities, illusion of control over one's life events, and an unrealistically optimistic perspective of the future).

On the other hand, defensive pessimism is described by Cantor & Norem (1989, as cited by Norem, 2002) as a cognitive strategy of maintaining low expectations despite past successes and ruminating about potential risks and ways to deal with them.

The present study explores three different conceptualizations of optimism/pessimism – dispositional optimism, optimistic explanatory style, and defensive pessimism – and how they relate to health behaviour.

The strongest link between optimism and health leads through the self-regulatory aspects of behaviour. Scheier & Carver (1985), for example, reported correlations between optimism and active coping strategies. Peterson (1988) found association between health behaviour and optimistic explanatory style. Moreover, Peterson, Seligman & Vaillant (1988) showed that pessimistic explanatory style (belief that negative events have stable, global and internal causes) at the age of 25 predicted poorer health in middle adulthood (45-60 years). Research literature on optimism and health generally reports correlation coefficients between .20 and .30.

In Europe, the relationship between optimism and health was confirmed in a Finnish study (Ylöstalo, Laitinen & Knuuttila, 2003) conducted on 8,690 middle-aged participants. Healthy lifestyle correlated with optimism and extroversion in samples of English, Belgian, Finnish and Norwegian young adults (Steptoe et al., 1994). More recently, a mixed Polish-Swedish researcher team found associations between health behaviour and optimism, self-efficacy and sense of coherence (Posadzki et al., 2010).

As a part of our own previous research project Cognitive Determinants of Health-Related Behaviour (ended in 2011), involving a sample of 1617 Czech university students, we tested whether optimism was associated with higher levels of health-related activity and pessimism with passivity. The level of optimism/pessimism (both dispositional and explanatory style) did not prove to be a significant predictor of most typical health behaviours: It was unrelated to dietary habits, substance use, prevention, lifestyle regularity, physical activity, or avoidance of sun and harmful substances. The only association that reached the significance level was found between optimism/pessimism and promotion of mental well-being (Dosedlová, Klimusová, & Slováčková, 2013).

These results differ from those obtained in American, as well as some European studies (see above), which generally associate higher optimism with higher levels of health-related activity and activity as such. Findings similar to ours were reported by Kubzansky, Kubzansky, & Maselko (2004) who tested the relationships between optimism/pessimism and anxiety, anger, depressive symptoms, and selected health-related behaviours (smoking, alcohol consumption and physical activity). Neither optimism nor pessimism predicted health behaviour as expected; instead, the authors even reported one paradoxical finding: Optimism positively correlated with smoking, which means that optimists smoked more than pessimists did. When thinking about these results, one explanation that comes to mind is a potential connection between optimism and age. Both of these studies were conducted on student samples – it is possible that the way optimism is expressed changes throughout the life span. At young age, it may produce a sense of invulnerability and immortality, inspiring young optimists to engage in risk behaviours more often. However, later in life, when people start to view their health more realistically, optimism can help them stop smoking. For this reason, we find it important to focus on the manifestations of different dispositions and cognitive strategies in different stages throughout the life course.

The present study has three main objectives:

- To systematize individual health behaviours
- To test the relationship between different health behaviours and different optimism/pessimism constructs (dispositional optimism, optimistic explanatory style, and defensive pessimism) on a sample of Czech respondents
- To explore the relationship between various components of health behaviour, optimism/pessimism, and self-reported health symptoms.

2. Method

2.1. Participants

The sample consisted of 268 respondents aged between 16 to 96 years (M = 31.4, SD = 15.5), most of them female (58%). A large majority of the respondents were secondary school (59.8%) or university (33.3%) graduates; the rest only had elementary education or vocational training. 27.4% were married, 65.5% unmarried, and 7.1% widowed or divorced. The respondents were chosen through convenience sampling – addressed through social networks, print media and email (in case of college students). Secondary school and university students constituted nearly one half of the sample (48.9%). The questionnaire was administered online. The participants were offered feedback on one of the inventories, but they were not remunerated. The data were collected in June 2014.

2.2. Instruments

2.2.1. **Life Orientation Test – Revised (LOT-R**; Scheier, Carver, & Bridges, 1994)

In 1985, Scheier & Carver devised the Life Orientation Test, which directly measures generalized expectations of positive or negative future. Optimism and pessimism are viewed as principal traits affecting people's orientations in various life events and determining activity.

The more recent short version Life Orientation Test – Revised (Scheier, Carver, & Bridges, 1994) contains six items and shows good internal consistency and stability. In the present sample, internal consistency (Cronbach's alpha) of the scale was .86.

2.2.2. **Attributional Style Questionnaire (ASQ**; Peterson et al., 1982)

The ASQ describes a set of hypothetical real-life situations. The respondents are asked to state one cause for each situation and rate it in terms of internality, stability and globality. The internal consistencies of the scales were high (α = .83, .89 and .85 for internality, stability and globality, respectively). The scores can normally be computed separately for positive and negative events; however, the two sets of subscores were so highly intercorrelated in our study that we decided to use composite scores for each of the three scales.

2.2.3. **Defensive Pessimism Questionnaire (DPQ**; Norem, 2002)

The measure contains 17 statements, with respondents rating their degree of agreement with each statement on a 7-point Likert-type scale. Using factor analysis, the author identified two underlying factors in the DPQ: Pessimism and Reflectivity. The scale is a good tool to distinguish between defensive and realistic pessimism (stemming from actual experience with repeated failures). The scores can identify respondents as defensive pessimists (upper tertile/quartile), strategic optimists (lower tretile/quartile), or aschematic (if both strategies are similarly likely to occur). In a study conducted in an academic context, Norem (2002) classified more than 40% students as aschematic. Out of the 17 items, only 12 are scored; the rest are filler items. The scale is highly internally consistent (α = .84 for Pessimism, .86 for Reflectivity, and .90 for the total score).

2.2.4. **Health Behaviours and Health Complaints Scale (**Dosedlová, Slováčková, & Klimusová, 2013)

Based on content analysis conducted as a part of a pilot study, we constructed a 45-item measure assessing different aspects of heath behaviour (dietary habits, fluid intake, sleep, lifestyle regularity, physical activity, substance use, disease prevention, and promotion of mental well-being). This part of the scale was scored through factor analysis (see below).

The second part of the measure consisted of 21 items representing different health problems. The respondents indicated on a 4-point Likert-type scale (1 – never; 4 – often) how often they suffered from each of the problems in the past year. The problems included headaches, neck pain and backache, gastrointestinal problems such as sickness, diarrhoea and constipation, vegetative symptoms like palpitations, dizziness and hand tremor, but also general problems like weakness, chronic fatigue and weakened immune system. The list is an extension of a health complaint inventory by Osecká et al. (1998). An overall score of subjective health complaints was obtained by

averaging item scores. The internal consistency of the scale was .90; distribution of scores was normal (M = 1.91, SD = .46, MD = 1.90).

2.3. Research sample

Considering the character and objectives of the pilot research of the implicit theories of family, a combination of the purposive sampling technique and self-selection method was used (Som, 1995). Three strata (from Latin stratum – layer) were selected for participation in the research:

1. Stratum: students studying teaching (nursery and primary schools) at the University of Hradec Králové,
2. Stratum: practicing teachers at selected primary and nursery schools in the city of Hradec Králové,
3. Stratum: pupils of the first and second grade of two cooperating primary school from Hradec Králové region.

The present study is concerned with the first and the second stratum only, i.e. the research sample comprises students of teaching and practicing teachers. All participated through online questionnaires. We addressed approximately 350 students and teachers, and 229 took part by 31st December 2013. Two questionnaires filled in by the authors and 8 incomplete ones were excluded from the research.

The final research sample of this study comprises N=219 respondents, 24 males and 197 females, the average age being 23 years (ranging from 16 to 60), 201 respondents are single, 17 are married and 1 is divorced.

2.4. Data analysis

The structure of the Health Behaviours Scale was explored using principal component analysis with Varimax rotation, yielding seven factors. The obtained variables were then entered into a set of regression analyses as dependent variables, with dispositional optimism, defensive pessimism, and optimistic explanatory style tested as predictors. Similar procedure was used in the second part of the study to identify potential predictors of health complaint total score (see 3.4). All analyses were conducted using IBM SPSS Statistics software.

3. Results and interpretation

3.1. Components of health behaviour

By conducting principal component analysis with the Health Behaviour Scale, we reduced the 45 behaviours to 7 categories which together explained 44% of common variance (supplementary materials on the PCA results can be provided at request). The factors were the following:

Healthy dietary habits (consumption of fruits, vegetables and wholemeal bread; avoidance of fast food, sweets, fried foods and other unhealthy foods; careful choice of food products; balanced diet and sufficient fluid intake): The factor explained 9% of variance.

Promotion of mental wellbeing (maintaining optimistic perspective and positive mood; high self-esteem; spending free time with people one likes; engaging in enjoyable activities): The factor explained 8.1% of variance.

Preference for "natural" way of life (avoidance of harmful substances in consumables and food products; preference for natural disease treatment; exposure to cold to increase one's hardiness; preference for natural forms of contraception): The factor explained 6.1% of variance.

Rest and regularity (sufficient and regular sleep; meditation and relaxation; time-management aimed at reducing stress; adjustment of lifestyle to current health condition): The factor explained 6% of variance.

Avoidance of harmful substances (avoidance of drugs, alcohol and nicotine; avoidance of smoke-filled environments): The factor explained 5.2% of variance.

Physical activity (exercise; other physical activity – work, walking, sex, etc.; limited car and elevator use): The factor explained 4.9% of variance.

Prevention (regular medical and dental checkups; use of safety belts and protective sports gear; protection against UV radiation; not leaving ailments untreated): The factor explained 4.6% of variance.

3.2. Correlations between optimism/pessimism variables

We used correlation analysis to explore the relationships between dispositional optimism (LOT-R), dimensions of internality, stability and globality of optimistic explanatory style (ASQ), and defensive pessimism and reflectivity dimensions (DPQ). The results in Table 1 show that dispositional optimism was relatively unrelated to the other two constructs: The only significant association was a weak negative correlation with the DPQ pessimism.

Dimensions of defensive pessimism were most strongly related to each other (r = .68); correlations with the ASQ scales were merely moderate and somewhat stronger for the reflectivity dimension than for pessimism itself. Similarly, the ASQ scales were strongly intercorrelated. Thus, we can conclude that the three optimism/pessimism constructs are relatively independent.

Table 1: Pearson correlations between the optimism/pessimism scales

	DPQ Pessimism	DPQ Reflectivity	ASQ Internality	ASQ Stability	ASQ Globality
DPQ Reflectivity	.68**				
ASQ Internality	.35**	.51**			
ASQ Stability	.37**	.55**	.84**		
ASQ Globality	.33**	.47**	.74**	.80**	
LOT_R Dispositional optimism	-.22**	-.01	-.03	.03	-.02

** Correlation is significant at the level of p < .01 (2-tailed).

3.3. Relationships of optimism/pessimism to health behaviours

Using regression analysis, we attempted to determine the best regression models explaining the variance of individual factors of health behaviour by dimensions of dispositional optimism, optimistic explanatory style, and defensive pessimism. The levels of optimism/pessimism significantly predicted promotion of mental wellbeing only, explaining 20.4% of total variance. The significant predictors included defensive pessimism (β = -.34) and the stability dimension of optimistic explanatory style as measured by the ASQ (β = .32). None of the other predictors achieved the level of significance (see Table 2).

The remaining six factors of health behaviour turned out to be unpredicted by optimism/pessimism variables.

Table 2: Predictors of promotion of mental well-being

Predictors	Standardized coefficients (Beta)	t	p
LOT_R Dispositional optimism	.12	1.78	.08
ASQ Internality	.19	1.58	.12
ASQ Stability	.32	2.38	.02
ASQ Globality	-.18	-1.68	.10
DPQ Pesimismus	-.34	-3.89	.00
DPQ Reflektivita	-.02	-0.20	.84

$R^2 = .204$, $F(6, 209) = 8.94$, $p < .001$

3.4. Relationships of optimism/pessimism and health behaviours to subjective health problems

In the last part of our study, we addressed the question which optimism/pessimism constructs and factors of health behaviour affect the degree of subjective health problems. Hence, we conducted a regression analysis with the composite score of health problems encountered in the past year (see 2.2.4.) as a dependent variable. The predictors were entered into the regression model in two blocks: The first block consisted of seven factors of health behaviour; the second comprised all six optimism/pessimism variables. The results are shown in Table 3. The first block of variables by itself explained 19.6% of variance in subjective health complaints. Significant predictors included rest and regularity, promotion of mental well-being, and healthy dietary habits. After the second set of predictors was added, the amount of explained variance increased to 22.6%; however, the 3% change was not significant (F_{change} (6, 202) = 1.31, p = .25). This means that altogether there were only three significant predictors of health complaints, i.e. the abovementioned factors of health behaviour.

Table 3: Predictors of subjective health complaints

	Predictors	**Standardized coefficients (Beta)**	**t**	**p**
1	Healthy dietary habits	-.17	-2.66	.01
	Promotion of mental well-being	-.25	-3.97	.00
	Preference for natural way of life	.05	0.84	.40
	Rest and regularity	-.29	-4.67	.00
	Avoidance of harmful substances	-.05	-0.75	.46
	Physical activity	-.04	-0.57	.57
	Prevention	.09	1.41	.16
2	Healthy dietary habits	-.14	-2.19	.03
	Promotion of mental well-being	-.23	-3.22	.00
	Preference for natural way of life	.07	1.05	.30
	Rest and regularity	-.29	-4.58	.00
	Avoidance of harmful substances	-.04	-0.61	.55
	Physical activity	-.04	-0.68	.50
	Prevention	.08	1.29	.20
	LOT_R Dispositional optimism	-.08	-1.23	.22
	DPQ Pessimism	.05	0.58	.56
	DPQ Reflectivity	.08	0.79	.43
	ASQ Internality	-.05	-0.41	.68
	ASQ Stability	.13	0.95	.35
	ASQ Globality	-.05	-0.46	.65

Model 1: $R^2 = .196$, $F(7, 208) = 7.22$, $p < .001$

Model 2: $R^2 = .226$, $F(13, 202) = 4.53$, $p < .001$

4. Discussion and conclusion

In general, the levels of optimism/pessimism (dispositional, explanatory style or defensive) were not confirmed as significant predictors of health behaviour in the Czech respondents. The optimism/pessimism variables were

unrelated to dietary habits, substance abuse, prevention, lifestyle regularity, physical activity, or preference for natural ways of life.

The only significant association was observed between optimism/pessimism and promotion of mental well-being. Optimists are more likely to maintain positive mood and peace of mind, have positive attitudes to themselves, spend time with people they like, get enough sleep, and engage in activities they enjoy doing. This positive quality of behaviour and experience most likely has a dispositional basis and is co-determined by the optimists' cognitive styles, which are especially characterized by the belief that positive events prevail in one's life and are more stable than negative outcomes. Theoretical conceptualization of defensive pessimism, as well as our previous research (Dosedlová et al., 2013), suggests that defensive pessimism is linked to high trait anxiety. It is the need to cope with long-term dispositional anxiety that leads defensive pessimists to develop cognitive strategies of keeping expectations low despite previous successes. Thus, it is not surprising they may find it difficult to actively promote mental well-being – stay in positive mood, maintain high self-esteem, not give in to worries, and look optimistically into the future.

What is more, none of the optimism/pessimism variables in our study had a significant effect on subjectively perceived health problems. It was shown that health complaints were mainly related to three aspects of health behaviour: to the ability to relax and maintain regular lifestyle, which was the strongest predictor, to promotion of mental wellbeing, and – less strongly – to healthy dietary habits.

These results are at variance with those reported in the U.S. and some European countries (Robbins et al., 1991), where higher optimism was associated with higher general activity, as well as health-related activity (see the Background section). Our own findings indicate that especially the explanatory style construct is largely dependent on the cultural context.

Inconsistent findings on optimism/pessimism and health-related behaviour were previously discussed by Baker (2007), who argued that various aspects of health behaviour could also be understood as coping strategies. In this perspective, differences between optimists and pessimists may become accentuated at difficult and stressful times, which are especially demanding in terms of coping and adjustment. Hence, for example, pessimists may be more likely to abuse alcohol and drugs in the periods of excessive mental strain.

Although optimism directly predicted almost none of the components of health behaviour in our respondents, it could still have had a substantial impact on their health through its association with positive and negative affect (relationship between optimism and promotion of mental wellbeing proved significant). Specifically, optimism is incompatible with depression, and multiple studies have provided evidence for the link between depression and deteriorated health and premature death (Peterson & Bossio, 2002). In addition, one must not forget about the socially mediated link between optimism and health. Optimistic respondents in our study reported seeking positive social relationships. This way, they were protected against social isolation, which is another well-established predictor of deteriorated health (Peterson & Bossio, 2002).

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